

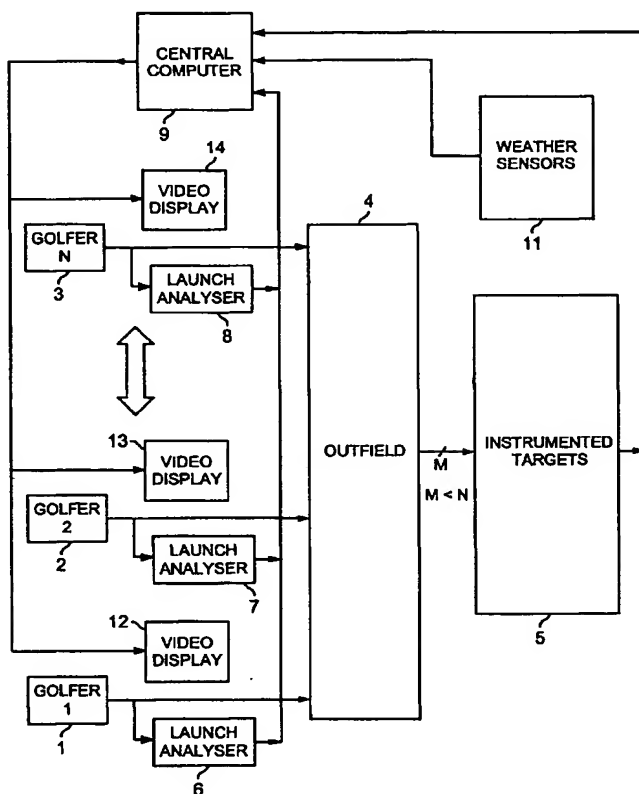


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(54) Title: METHODS AND SYSTEMS USING PREDICTION OF OUTCOME FOR LAUNCHED OBJECTS



(57) Abstract: Each golfer (1-3) on a golf range (4) has an individual display (12-14) showing at least a predicted outcome of each of his/her shots, and a launch-analyser (6-8) to measure velocity vectors of the ball and/or club at strike for central-computation (9) of the prediction. Vibration and piezo-cable sensors (54, 55; 68, 69) at instrumented targets (5; 41-45, 47) distributed throughout the range (4), detect the presence of balls arriving in their respective locations for matching with launched balls using the computed predictions and probability; active or passive radio-frequency identification and location of balls may also be used. Where a match is found, error between predicted and actual outcome is applied to adaptive correction of the prediction-computing process, and the actual outcome is displayed to the golfer instead of the prediction. Ball and/or club velocity vectors, and ball spin, at launch are measured from light changes occurring in detection planes (96, 97; 105; 114-117; 134; 144-146) defined by slit apertures (94, 95; 104), and resulting from retro-reflection from ball (91; 110; 131) and/or club (130).